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EARLY RESULTS OF THE RHEUMATIC (RHEUMATIC HEART ECHO UTILIZATION AND MONITORING ACTUARIAL TRENDS IN INDIAN CHILDREN) STUDY

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Purpose: Rheumatic Heart Disease (RHD) is estimated to affect over 20 million people worldwide, the vast majority being children in developing countries. Conventionally, auscultation has been used for diagnosing RHD, but echo-Doppler is likely to be more sensitive and specific. We carried out a cross sectional survey to diagnose RHD in asymptomatic children aged 5-15 years, living in rural areas, using portable echocardiography.

Methods: Children, aged 5-15 years, from government schools and private schools, in a pre identified rural area were studied. After a history and physical examination, echo-Doppler was performed, using a bedside portable echocardiography machine. A diagnosis of RHD was made by echo-Doppler using WHO criteria.

Results: A total of 2600 children were screened. 1314 were males. The mean age was 11.18 ± 2.4 years. All children were asymptomatic. RHD was diagnosed by clinical examination in two cases only (clinical prevalence: 0.07%). Echo-Doppler diagnosed RHD in 65 cases, giving a prevalence of 2.5%. Doppler revealed mitral regurgitation in 56 and aortic regurgitation in nine. Thickening of the valve was present in all 65 cases. Other cardiac lesions identified by echo-Doppler were moderate sized atrial septal defect (four), bicuspid aortic valve (four), ventricular septal defect large (two), tetralogy of Fallot (two), patent ductus arteriosus (three) and mild left ventricular dysfunction, possibly due to dilated cardiomyopathy (one).

Conclusions: This preliminary work demonstrates feasibility of echo screening in children for diagnosing RHD. In this study, the prevalence of RHD was found to be high, when screening echo-Doppler was used.

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PLETHYSMOGRAPHY VARIABILITY INDEX (PVI) AS AN INDICATOR OF VOLUME-RESPONSIVE HYPOTENSION (VRH) IN NEWBORN INFANTS DURING SURGERY

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Background: PVI is an indirect, non-invasive measure of the respiratory variability of stroke volume and may indicate VRH.

Aim: To evaluate the diagnostic value of PVI in newborn infants during surgery.

Methods: Thirty-two mechanically ventilated infants were monitored during surgery with a Radical 7.0 pulseoximeter (Masimo). VRH was defined as an increase in mean arterial blood pressure by >10% following volume bolus (VB) administration. VB ($\geq 10\text{ml/kg}$ i.v.) were administered at the discretion of the neonatologist. The PVI cut-off value was defined by the 95th percentile of all PVI values from 5 infants who didn't receive any VB.

Results: The PVI cut-off was 18%.

111 VB were administered in 27 infants. Because 27/111 VB were administered within $\leq 3\text{min}$ after the previous VB, these repeated VB were summarized with the previous VB, resulting in 84 episodes. 79/84 episodes full-filled criteria of VRH. The maximum pre-volume (pre-)PVI value in these 79 episodes was 25(17-37)%, the post-volume (post-)PVI was 15(7-27)% ($p < 0.001$). 72/79 maximum pre-PVI value were $> 18\%$ (91% sensitivity for VRH).

In 12/27 episodes with repeated VB within $\leq 3\text{min}$, post-PVI didn't decrease after VB to $\leq 18\%$. Whereas in 62/79 episodes without additional VB within $\leq 3\text{min}$, post-PVI decreased to $\leq 18\%$ ($p < 0.001$). The minimum post-PVI after VB was significant higher in these 27 episodes (18(12-29)% vs. 15(7-28)%; $p = 0.001$).

Conclusion: This preliminary evaluation shows that the PVI can indicate VRH in newborn infants during surgery.

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